

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of Group II (claims 53-59 and 62-63) in the reply filed on 09/10/09 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Priority***

2. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

4. The information disclosure statements (IDS) submitted on 09/26/05, 04/13/05 and 09/28/09 were considered by the examiner.

### ***Drawings***

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 1 (*it is not in FIGURE 1A as stated in the specification*). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the

immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

6. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
7. The preliminary amendments filed 04/13/05 and 08/30/05 do not introduce new matter into the disclosure.

### ***Claim Rejections - 35 USC § 112***

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 53-59 and 62-63 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
10. Claim 53 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: the bipolar plates include openings for "media"; similarly, the

flank has at least one perforation "*for conducting the media*". Since the present claim do not elaborate on how such features are structurally interrelated and/or they are systemically integrated, it is uncertain how the structure as instantly claimed is capable of providing media or the media through the electrochemical cell stack, bipolar plates and, in particular, through the resilient bead arrangement and the flank perforation.

11. Claim 53 recites the limitation "said layering" in line 7. There is insufficient antecedent basis for this limitation in the claim.

### ***Double Patenting***

12. (*at least*) Claims 53, 58-59 and 62 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 15, 17, 20-21, 23 and 28 of copending Application No. 10/496725.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the scope of claim 15, 17, 20-21, 23 and 28 of copending Application No. 10/496725 as instantly amended fully circumscribes the subject matter of the present application; if not at least the combination of claims does represent obvious variations of the presently claimed invention.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim Rejections - 35 USC § 102***

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. Claims 53-58 and 62 are rejected under 35 U.S.C. 102(b) as being anticipated by the publication WO 02/69416 (hereinafter the WO'416).

As to claim 53 and 62:

The WO'416 discloses a fuel cell apparatus including at least two facing plates, stacked together but spaced apart by resilient sealing beads disposed on at least one of the plates. The resilient beads are adapted to facilitate control of fluid flows between the plates and are thus called fluid sealing beads (Abstract/ Page 3, lines 8-31 & FIGURE 3). Each plate contains at least one bolt aperture for securement of the two plates together. Separate beads disposed about the apertures act as aperture load compensation beads (Abstract/ Page 3, lines 8-31 & FIGURE 3). The WO'416 discloses stacked fuel cell plates and components (Page 1, lines 8-15 & page 3, lines 24-30). **FIGURE 3** show the configuration of the plate including media holes or apertures (see FIGURE 3). *In this case, the plates represent bipolar plates; and the flank is taken to be represented by ANY part of the bead side either to the right or left (or any structural orientation) of the formed bead or the area along either side thereof. Note that the present claims fail to define the specific structure of the flank with respect to structural arrangement or spatial orientation. Note that the stacking of the fuel cell elements does produce sufficient compression in the stacking direction.*

As to claims 54 and 57:

It can be appreciated from viewing **FIGURES 1 and 3** that the perforations include circular and/or angular perforations.

As to claims 55-56:

It is noted that bead of the WO'416 must necessarily include both an interior and an outer surface. *Note that the claims do not define the specific placement or spatial orientation of those surfaces, thus, suffice it to say that the disclosed bead includes internal and external surfaces.* Further note that the resilient beads are adapted to facilitate control of fluid flows between the plates and are thus called fluid sealing beads (Abstract/ Page 3, lines 8-31 & FIGURE 3). *Thus, the disclosed sealing beads has the functionality of sealing, thus, the outer surface thereof is sealed with respect to the interior thereof, and the interior provides fluid communication therein for allowing flow of reacting material to the electrochemically active areas of the fuel cell.*

As to claim 58:

In the disclosure of the WO'416 there are mentioned a plurality of fuel cell components or members in close proximity with the plates (Abstract/ Page 3, line 8 to Page 4, line 15/ CLAIM 1 & FIGURE 3). *Thus, any one of the plurality of the fuel cell components in close proximity with the plate is capable of acting as the claimed carrier as the present claim fails to define the limitation "carrier" in terms of either structure, material or function; additionally, it is possible that a portion of the disclosed plate itself act as the claimed carrier.*

Thus, the present claims are anticipated.

15. (at least) Claims 53-54 and 62 are rejected under 35 U.S.C. 102(b) as being anticipated by the publication EP 0408104 (heretofore the EP'104).

As to claims 53 and 62:

EP' 104 discloses a fuel cell stack including a set of fuel cell units comprising a set of electrodes and separator plates (acting as the bipolar plates) for separating the fuel cell units (Col 1, lines 3-8; CLAIM 1; FIGURES 2 and 8). The fuel cell has separator plates 7 with a corrugated central portion 5 and gas supplying and exiting openings on flat edges held between an upper and lower partitioning plate with corresponding openings, the partitioning plates 20, 21 being provided with a transfer region between the flat partitioning plates and the separator plate, the connection between the transfer regions and the separator plate comprising a circumferential connection around said openings (CLAIM 1). **FIGURES 3-4** below show a plate and an arrangement including the electrochemically active area of the fuel cell unit in conjunction with the plates and the openings for conducting media; and a bead arrangement including a region, part, area or side thereof having a perforation for conducting media.

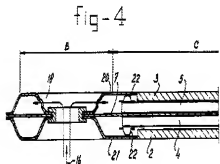
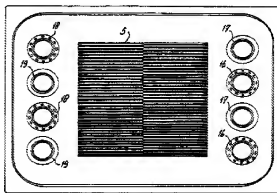


fig-3



*In this case, the separator plates represent bipolar plates; and the flank is taken to be represented by ANY part of the bead side either to the right or left (or any structural orientation) of the formed bead or the area along either side thereof. Note that the present claims fail to define the specific structure of the flank with respect to structural arrangement or spatial orientation. Note that the stacking of the fuel cell elements does produce sufficient compression in the stacking direction.*

As to claim 54:

It can be appreciated from viewing **FIGURES 3-4** that the openings include circular and/or angular openings.

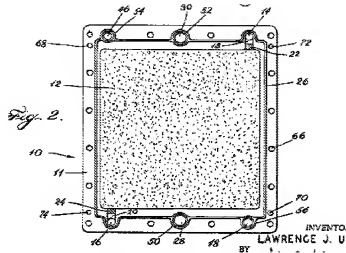
Thus, the present claims are anticipated.

16. (at least) Claims 53-54 and 62 are rejected under 35 U.S.C. 102(b) as being anticipated by Uline 3320092.

As to claims 53 and 62:

Uline discloses a stacked fuel cell arrangement including a plurality of fuel cell units comprising a plurality of electrodes having frame plates (COL 1, lines 9-11/ COL 2, lines 1-3, CLAIM 1 & FIGURE 1). There are provided resilient frames 11 including apertures 14, 16, 28, 30, 46, 48 for media (COL 2, lines 15-70 & COL 3, lines 20-35/CLAIM 1 & **FIGURE 2**); and there is disclosed a generally peripherally sealing bead 26 integrally provided in the marginal portions of the frame plate 11 and partially surrounding the apertures. Such a sealing bead is designed to seal against an adjacent flat metal barrier conductor plate (COL 2, lines 47-52/ CLAIM 1 & **FIGURE 2**). There also disclosed beads 34 and 36 as shown in **FIGURES 3-4**.

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*In this case, note the frame plates represent bipolar plates; and the flank is taken to be represented by ANY part of the bead side either to the right or left (or any structural orientation) of the formed bead or the area along either side thereof. Note that the present claims fail to define the specific structure of the flank with respect to structural arrangement or spatial orientation. Note that in this case the bead arrangement surrounds various apertures in the frame plate and that the frame plate includes apertures or perforations for conducting media. Note that the stacking of the fuel cell elements does produce sufficient compression in the stacking direction.*

As to claim 54:

It can be appreciated from viewing **FIGURE 2** that the apertures include circular and/or angular apertures.

Thus, the present claims are anticipated.



***Claim Rejections - 35 USC § 103***

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

19. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

20. Claim 59 is rejected under 35 U.S.C. 103(a) as being unpatentable over: a) the publication WO 02/69416 (heretofore the WO'416); and/or b) the publication EP 0408104 (heretofore the EP'104); and/or c) Uline 3320092 as applied to claim 53 above, and further in view of Japanese publication JP 2000-48835 (herein called JP'835).

The WO'416, EP'104 and Uline are all applied, argued and incorporated herein for the reasons discussed above. However, neither of the references expressly discloses the specific coating on the bead arrangement.

JP'835 discloses a fuel cell comprising a gasket frame/plate wherein one or both sides of a metal substrate in the gasket is coated with a foamed rubber or low hardness rubber layers, and a bead-like sealing part is attached thereto (Abstract). *Thus, JP'835 shows the concept of depositing a sealing rubber-based layer on surfaces of a metal substrate and/or bead-like sealing part for enhancing sealing or bonding.*

In view of the above, it would be within the purview of a skilled artisan at the time the invention was made to add the specific coating of JP'835 to the bead arrangement in the fuel cell system of the WO'416, EP'104 and Uline as JP'835 teaches that such a coating thereon provides a gasket sealing member with excellent installation/functional performance and fine sealing performance.

21. Claim 63 is rejected under 35 U.S.C. 103(a) as being unpatentable over: a) the publication WO 02/69416 (heretofore the WO'416); and/or b) the publication EP 0408104 (heretofore the EP'104); and/or c) Uline 3320092 as applied to claim 53 above, and further in view of Turpin et al 2004/0137306.

The WO'416, EP'104 and Uline are all applied, argued and incorporated herein for the reasons discussed above. However, neither of the references expressly discloses the electrochemical compressor system (i.e. an electrolyzer).

Turpin et al discloses fuel cell or electrolyzers comprising a fuel cell or electrolyzer stack, respectively (Title, Abstract, 0001); and the invention is intended to cover any fuel cell or electrolyzer using a stack of unit cells and bipolar plates (0005).

In view of the above, it would be within the purview of a skilled artisan at the time the invention was made to incorporate (*or interchange*) the teachings of Turpin et al related to the field of electrolyzers (electrochemical compressor system) into the teachings of the WO'416, EP'104 and Uline as Turpin et al show that the invention is intended to cover any fuel cell or electrolyzer using a stack of unit cells and bipolar plates (0005). Thus, from the disclosure of Turpin et al it is obvious to note that technical applications of electrochemical cells and bipolar plates are fully applicable to both fuel cell and electrolyzers as they both are technically related, and contain similar features even though they have reversed operations. Thus, it would have been obvious to a person of ordinary skill to know that *generic* teachings concerning electrochemical cells and bipolar plates find application in both fuel cells and electrolyzers (or electrochemical compressor systems).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Raymond Alejandro/  
Primary Examiner, Art Unit 1795